

month in the districts named. The morning report of the 5th showed a 24-hour temperature rise of 10 to 20 over the middle and east Gulf states, and the highest temperature of the month was noted in the Gulf States on the 5th and 6th. During the 6th a warm wave advanced from the Lake Superior region over the Ohio Valley and reached the Atlantic coast on the 7th, with a temperature rise of more than 20 from New England to Florida.

A warm wave appeared in the Northwest on the 9th, advanced to the Lake region and the Ohio Valley by the 10th, with a temperature rise of 30 to 40 in 24 hours in the middle Missouri valley, and extended over New England and the Canadian Maritime Provinces during the 11th. The morning report of the 12th showed a 24-hour temperature rise of more than 30 in the Northwest. The warm wave extended over the Missouri Valley during that date, over the Ohio Valley during the 13th, with a temperature rise of 20 to 30 from the upper Mississippi valley over Tennessee, reached the Atlantic coast on the 14th, and the morning of the 15th the 24-hour rise was 20 to 50 in New England. A marked rise in temperature occurred in the Northwest on the 15th; the morning report of the 16th showed a rise of more than 30 in Assiniboia and north-eastern Montana; a rise of 30 to 50 occurred from the extreme upper Mississippi valley over the Lake Superior region by the morning of the 17th; and the warm wave reached the middle Atlantic and New England states during the 18th. No well defined warm waves traversed the districts east of the Rocky Mountains after the 18th.

PERIODS OF LOW TEMPERATURE.

On the 1st the temperature fell more than 20 in Kansas; during the 2d the cool wave advanced over the middle Mississippi and Ohio valleys, with a temperature fall of more than 20 in Oklahoma Territory and southern Missouri, and temperature below freezing to northern Texas and central New Mexico; and on the 3d reached the middle Atlantic coast, with a temperature fall of 20 in western Tennessee. The morning of the 5th a temperature fall of more than 20 was shown on the middle-eastern and southeast slopes of the Rocky Mountains, with zero temperature at North Platte, Nebr., and temperature below freezing in western Texas; during the 5th the temperature fell thence eastward to the middle Atlantic and New England coasts, and the morning of the 6th the temperature was below freezing in eastern Tennessee and along the Atlantic coast to South Carolina. On the 6th the temperature fell more than 20 in Manitoba and 10 to 14 over the southern Rocky Mountain region.

During the 7th a temperature fall of 10 to 20 occurred in areas from the western Lake region to Texas, and freezing weather was reported north of a line traced from northern Lower Michigan to southern New Mexico. Advancing eastward the cold wave reached the Ohio Valley on the 8th, with a temperature fall of more than 20 along the middle Ohio River, and reached the middle Atlantic coast unattended by severe cold

on the 9th. The temperature fell more than 20 in the Northwest on the 10th; the cold wave extended to the Ohio Valley by the 11th, with temperature below zero in the eastern Dakotas and Minnesota, and freezing weather to southern Arkansas and central Texas; and reached the Atlantic coast states on the 12th, with a temperature fall of more than 20, and freezing weather to central Georgia and northern South Carolina.

The most important cold wave of the month appeared in the Northwest on the 13th, where the temperature fell 40 to 50, and was below zero in North Dakota, Manitoba, and the Saskatchewan Valley. During the 14th the cold wave advanced over the western Lake region and the lower Ohio valley, the temperature fell 20 to 30 from the southeast slope of the Rocky Mountains to Manitoba and the western Lake Superior region, and the line of freezing weather extended from southern New Mexico to the southern Lake region. On the 15th the temperature fall was 20 to 30 from the lower Mississippi valley over the Lake region, zero temperature was noted in northern Missouri and northern Illinois, the line of freezing weather extended from central Texas to Virginia, and the lowest temperature of the month occurred in north-central districts, the minimum being -20 to -30 in North Dakota and northern Minnesota. By the evening of the 15th the cold wave reached the middle Atlantic coast. The morning of the 16th a 24-hour temperature fall of more than 20 was noted along the middle Atlantic and New England coasts, and the line of freezing weather extended from Arkansas to the Virginia coast.

From the 16th to 19th a cold wave advanced from the northeast slope of the Rocky Mountains to the west Gulf states, with temperature falls of 20 to 30 during the 16th, 17th, and 18th. From the 25th to 27th a cold wave advanced from the northeast slope of the Rocky Mountains to New England and the Canadian Maritime Provinces, with temperature falls of 20 to 30, and in the lower Saint Lawrence valley the 24-hour fall in temperature was more than 40. From the 27th to 29th a moderate cold wave advanced from the Northwest over the central valleys.

FROST.

Frost was noted generally over the Florida Peninsula north of the 27th parallel on the 13th, and along the immediate middle coast of the Gulf of Mexico on the 1st, 13th, 17th, 26th, and 27th. No frost was reported in Texas south of the 30th parallel. Frost was reported on a number of dates in the mountains of central and northern New Mexico and eastern Arizona. Frost was reported on the Pacific coast as follows: In the Santa Lucia Mountains in Monterey Co., Cal., 7th, and 9th to 12th; at Alvarado, Alameda Co., Cal., on the 11th; at Sacramento, Cal., on the 2d, 3d, and 7th; at Eureka, Cal., on the 2d, 8th, 9th, and 14th; at Roseburgh, Oregon, on the 1st, 2d, 3d, 5th, 14th, and 15th; at Eola and Albany, Oregon, on a number of dates; at Astoria, Oregon, on the 16th and 17th; at Port Angeles, Wash., on the 6th, 17th, and 24th; and at East Sound, Wash., on the 2d to 8th, 13th, 14th, and 24th.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for February, 1892, as determined from the reports of about 2,000 stations, is exhibited on Chart III. In the table of miscellaneous meteorological data the total precipitation and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

In February the monthly precipitation is usually greatest on the extreme north Pacific coast, where it exceeds 11.00 at Neah Bay, Wash. In areas on the immediate Pacific coast north of

the 42d parallel, and along the line of the Central Pacific Railroad crossing the summit of the Sierra Nevada Mountains in California, the average precipitation for February exceeds 8.00, and it is 4.00 to 6.00 generally along the Pacific coast, and in the central valleys of California north of the 38th parallel. In an area extending southward over central Utah, and in the mountains of north-central Colorado the normal amount is 2.00 to 4.00. East of the Rocky Mountains the greatest precipitation is noted over a great part of the Gulf States east of the 95th meridian, and in parts of southern Tennessee, where it is more than 6.00, and the normal amount is generally greater than 4.00 in the Gulf States, Kentucky, Tennessee, the interior of the south Atlantic states, over the southwest and northern parts of the Florida Peninsula, and along the Atlantic coast

from North Carolina to the Gulf of Saint Lawrence. Over the greater part of the Rocky Mountain and plateau regions the precipitation is less than 1.00, and in large areas in those districts the normal amount for February is less than 0.50. The average amount is less than 2.00 from the Lake Superior region westward and southwestward to the eastern Rocky Mountain slope, and thence southward to the Rio Grande River.

In February, 1892, the greatest monthly precipitation, 11.13, was reported at Felton, Cal.; at Boulder Creek, Cal., a depth of 9.51 was noted; and the amount reported exceeded 8.00 at Georgetown, Cal., Huntingburgh, Ind., and Appleton City, Mo. Precipitation to exceed 6.00 was noted at Neah Bay, Wash., and Astoria, Oregon, on the California coast between Eureka and San Francisco, at stations on the Central Pacific Railroad in the Sierra Nevada Mountains, at Julian, San Diego Co., Cal., in an area extending from southwestern Kansas over central Missouri, in northeastern South Carolina, and at Hatteras, N. C. Less than 0.50 fell in central Washington east of the Cascade Mountain range, over a great part of southeastern California, in large areas of the eastern plateau and Rocky Mountain regions, from northeastern North Dakota over the northern Lake Superior region, on the middle Gulf coast, and over the Florida Peninsula between the 39th and 40th parallels. Less than 1.00 fell along the middle and east Gulf coasts, over the north part of the Florida Peninsula, from the eastern part of the southern plateau region over western and southern Texas, in the middle and upper Missouri and Red River of the North valleys, generally over the middle and northern plateau regions, and in southeastern California.

DEPARTURES FROM NORMAL PRECIPITATION.

The monthly precipitation was generally deficient. An area of excess extended from the extreme south Pacific coast over the southern plateau region and the middle eastern slope of the Rocky Mountains to the lower Missouri valley. A second area of excess occupied a great part of the Lake region and extended thence to the eastern Dakotas, and more than the usual amount of rain fell at points in eastern Virginia and the eastern Carolinas. The most marked deficiency in monthly precipitation was noted in western Washington, where it varied from 4.00 to nearly 6.00. At New Orleans, La., the deficiency was more than 4.00, and it was more than 2.00 on the east and south New England coasts, in New Jersey and eastern Pennsylvania, from Tennessee to the middle and east Gulf and north Florida coasts, and on the Pacific coast north of the 42d parallel. The greatest excess in monthly precipitation occurred at Hatteras, N. C., and Leavenworth, Kans., where it was more than 2.00, and the excess was more than 1.00 at Palestine, Tex., Tucson, Ariz., Marquette, Mich., and Norfolk, Va.; elsewhere in districts where the precipitation was greater than the normal the excess was less than 1.00.

Considered by districts the average percentage of the normal in districts where the monthly precipitation was in excess was about as follows: middle-eastern slope of the Rocky Mountains, 242; southern plateau region, 183; lower Missouri valley, 133; upper lake region, 105; south Pacific coast, 103. In districts where the precipitation was deficient the percentage of the normal was about as follows: northern plateau region, 36; New England, 41; east Gulf states, 43; north Pacific coast, 50; Ohio Valley and Tennessee, 68; west Gulf states, 73; middle Atlantic states, 77; southeast slope of the Rocky Mountains, 78; middle plateau region, 79; south Atlantic states, 81; middle Pacific coast, 86; Key West, Fla., 94; lower lake region, 96. On the northeast slope of the Rocky Mountains, in the extreme northwest, and in the upper Mississippi valley the monthly precipitation averaged about normal.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for February for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for

February, 1892; (4) the departure of the current month from the average; (5) and the extremes for February during the period of observation and the years of occurrence:

State and station.	(1) Average for the month of Feb.	(2) Length of record.	(3) Total for Feb., 1892.	(4) Departure from average.	(5) Extremes for February.			
					Greatest.		Least.	
					Am't.	Year.	Am't.	Year.
<i>Arizona.</i>	<i>Inches.</i>	<i>Years.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>		<i>Inches.</i>	
Fort Apache.....	1.92	16	2.29	+ 0.37	4.10	1891	0.89	1889
Fort Mohave.....	0.91	20	1.74	+ 0.83	5.00	1874	0.00	1889
Whipple Barracks.....	1.92	20	1.64	- 0.28	6.55	1884	0.01	1876
<i>Arkansas.</i>								
Lead Hill.....	4.79	10	1.24	- 3.55	10.93	1884	1.24	1892
<i>California.</i>								
Fort Bidwell.....	2.43	21	1.20	- 1.23	6.00	1881	0.00	1879
Riverside.....	2.80	11	0.60	- 2.20	7.94	1884	0.00	1885
<i>Colorado.</i>								
Las Animas.....	0.26	10	0.53	+ 0.27	0.59	1888	0.00	1891
<i>Florida.</i>								
Merritts Island.....	2.70	14	2.77	+ 0.07	6.01	1888	0.15	1882
<i>Georgia.</i>								
Forsyth.....	4.57	18	4.93	+ 0.36	8.11	1891	1.19	1879
<i>Idaho.</i>								
Boise Barracks.....	1.77	18	0.25	- 1.52	6.49	1872	T.	1889
Fort Sherman.....	2.31	9	0.32	- 1.99	5.81	1890	0.42	1889
<i>Illinois.</i>								
Centralia.....	3.73	11	5.65	+ 1.92	10.35	1883	0.85	1885
<i>Indiana.</i>								
La Fayette.....	3.26	12	2.19	- 1.07	7.43	1883	1.20	1889
<i>Indian Territory.</i>								
Fort Supply.....	0.77	13	2.02	+ 1.25	3.06	1874	0.00	1887
<i>Iowa.</i>								
Cresco.....	1.01	20	1.02	+ 0.01	1.88	1887	0.07	1877
<i>Kansas.</i>								
Independence.....	2.10	20	4.88	+ 2.78	7.04	1881	0.25	1872
Salina.....	0.55	9	2.01	+ 1.46	2.01	1892	T.	1891
<i>Louisiana.</i>								
Grand Coteau.....	3.54	9	2.04	- 1.50	8.42	1891	1.37	1886
<i>Maine.</i>								
Orono.....	4.10	22	1.96	- 2.14	8.39	1876	1.20	1877
<i>Maryland.</i>								
Cumberland.....	2.64	19	1.72	- 0.92	4.92	1882	0.60	1877
<i>Michigan.</i>								
Kalamazoo.....	2.68	16	2.26	- 0.42	5.44	1881	0.12	1877
<i>Missouri.</i>								
Chillicothe.....	2.19	8	2.01	- 0.18	3.95	1885	0.80	1884
Sedalia.....	2.42	13	6.42	+ 4.00	6.42	1892	0.65	1879
<i>Montana.</i>								
Fort Custer.....	0.45	12	0.60	+ 0.15	1.29	1885	0.02	1882
<i>Nebraska.</i>								
Genoa (near).....	0.76	16	1.64	+ 0.88	2.55	1891	0.10	1889
<i>Nevada.</i>								
Browns.....	0.56	21	0.52	- 0.04	2.05	1872	0.00	1882, 1889
Carson City.....	1.35	15	1.39	+ 0.04	4.18	1891	0.08	1877
<i>New Hampshire.</i>								
Hanover.....	2.35	48	1.41	- 0.94	7.67	1887	0.50	1865
<i>New Mexico.</i>								
Deming.....	0.42	9	0.86	+ 0.44	1.78	1888	0.00	1883, 1890
Fort Wingate.....	1.71	21	1.40	- 0.31	11.20	1873	0.05	1881
<i>New York.</i>								
Cooperstown.....	2.23	38	2.23	0.00	5.21	1887	0.60	1856
Plattsburgh Barracks.....	1.34	21	2.47	+ 1.13	2.69	1880	0.20	1888
<i>North Carolina.</i>								
Lenoir.....	4.39	20	2.10	- 2.29	9.00	1873	0.60	1877
<i>Oklahoma.</i>								
Fort Reno.....	1.16	7	1.00	- 0.16	2.84	1889	0.13	1891
Fort Sill.....	1.24	20	1.23	- 0.01	3.45	1881	T.	1876
<i>Oregon.</i>								
Bandon.....	9.22	14	2.11	- 7.11	17.82	1881	2.11	1892
Eola.....	5.60	22	1.23	- 4.37	13.24	1872	0.35	1889
<i>Pennsylvania.</i>								
Dyberry.....	2.79	26	1.29	- 1.50	5.59	1884	0.60	1877
Grampian Hills.....	3.63	20	3.17	- 0.46	7.62	1887	1.56	1872
Wellsborough.....	5.67	12	2.21	- 3.46	10.93	1884	0.95	1887
<i>South Carolina.</i>								
Statesburgh.....	2.76	10	4.23	+ 1.47	5.47	1889	1.18	1883
<i>South Dakota.</i>								
Fort Sully.....	0.42	21	0.50	+ 0.08	1.50	1871	0.03	1877
<i>Texas.</i>								
Austin.....	2.63	20	2.44	- 0.19	7.22	1888	T.	1885
Silver Falls.....	0.95	5	0.10	- 0.85	2.07	1887	T.	1891
<i>Utah.</i>								
Terrace.....	0.34	18	1.30	1881	0.00	†
<i>Vermont.</i>								
Stratford.....	2.90	18	1.50	- 1.40	5.90	1887	0.30	1877
<i>Virginia.</i>								
Dale Enterprise.....	3.40	12	1.90	- 1.50	9.00	1884	0.83	1882
<i>Washington.</i>								
Fort Townsend.....	1.85	17	1.78	- 0.07	3.94	1879	0.37	1886
<i>West Virginia.</i>								
Parkersburg.....	3.74	7	4.27	+ 0.53	7.42	1887	1.40	1886
<i>Wisconsin.</i>								
Embarrass.....	2.27	21	3.15	+ 0.88	4.70	1887	0.35	1877
Madison.....	1.72	27	1.94	+ 0.22	7.90	1869	0.30	1877
<i>Wyoming.</i>								
Fort Washakie.....	0.31	9	0.30	- 0.01	1.04	1881	0.04	1882

* Frequently.

† 1875, 1876, and 1889.

PRECIPITATION, JANUARY AND FEBRUARY.

For the period January 1 to February 29, 1892, the precipitation averaged more than double the usual amount in the

southern plateau region, and was one-tenth to four-tenths greater than usual in the east Gulf states, the upper Mississippi and lower Missouri valleys, and on the middle-eastern slope of the Rocky Mountains. In New England, at Key West, Fla., in the west Gulf states, the Ohio Valley and Tennessee, the extreme northwest, on the southeast slope of the Rocky Mountains, over the northern plateau region, and along the Pacific coast five-tenths to eight-tenths of the usual precipitation was reported. In the middle and south Atlantic states, the Lake region, on the northeast slope of the Rocky Mountains, and over the middle plateau region the precipitation for the period named averaged about normal.

YEARS OF GREATEST PRECIPITATION FOR FEBRUARY.

At Palestine, Tex., Sedalia, Mo., Salina, Kans., and Montrose, Colo., the precipitation for the current month was the greatest ever reported for February by 0.10, 1.47, 0.24, and 0.16, respectively. In the upper Ohio valley and at Lake Erie stations the greatest precipitation for February occurred in 1887; on the Washington coast in 1885; in the middle Ohio valley, Maine, from New Jersey southwestward over central North Carolina, on the south Pacific coast, and over the west part of the southern plateau region in 1884; in the middle Mississippi and lower Ohio valleys in 1882; from the southeast slope of the Rocky Mountains to the upper Mississippi and Red River of the North valleys, and over the northern plateau region and the west part of the middle plateau region in 1881; on the middle Pacific coast in 1878; in the lower Rio Grande valley in 1877; and along the south Atlantic coast in 1874.

YEARS OF LEAST PRECIPITATION FOR FEBRUARY.

At Pensacola, Fla., New Orleans, La., Lead Hill, Ark., Bandon, Oregon, and Tatoosh Island, Wash., the precipitation for the current month was the least ever reported for February by 1.50, 0.94, 0.23, 0.46, and 2.60, respectively. Over the northern plateau region and generally on the north Pacific coast the least precipitation for February occurred in 1889; on the middle Pacific coast in 1886; on the south Pacific coast in 1885; in the lower Rio Grande valley in 1884; in southern Arizona in 1881; and in the middle and upper Mississippi valleys, the middle and lower Ohio valleys, the Lake region, New York, New England, and Virginia in 1877.

EXCESSIVE PRECIPITATION.

The following tables show, by states, the number of stations reporting monthly precipitation to equal or exceed 10.00; precipitation to equal or exceed 2.50 in 24 hours; and precipitation to equal or exceed 1.00 in 1 hour in February, 1892:

Monthly precipitation to equal or exceed 10.00.

State.	Number of stations.	State.	Number of stations.
California	1		

Precipitation to equal or exceed 2.50 in 24 hours.

State.	Number of stations.	Dates.	State.	Number of stations.	Dates.
South Carolina	5	19-20, 20, 20-21, 21.	Arkansas	1	6.
Louisiana	4	19, 20.	Maine	1	11-12.
Mississippi	4	7, 19, 19-20.	Florida	1	23-24.
California	3	19, 20, 21.	North Carolina	1	28-29.
Georgia	3	7, 7-8, 8-9.	Tennessee	1	7.
Missouri	2	18-19, 24.	Texas	1	19.

Precipitation to equal or exceed 1.00 in 1 hour.

Texas	2	19.			
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Table of excessive precipitation, February, 1892.

State and station.	Monthly rainfall in inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall 1 inch, or more, in one hour.		
		Ant.	Day.	Ant.	Time.	Day.
<i>Arkansas.</i>	<i>Inches.</i>	<i>Inches.</i>		<i>Inches.</i>	<i>h. m.</i>	
Oseola		2.60	6			
<i>California.</i>						
Felton	11-13					
Georgetown		3.00	20			
Grass Valley		2.67	19			
Kennedy Gold Mine		2.94	21			
<i>Florida.</i>						
Hypoluxo		3.24	23-24			
<i>Georgia.</i>						
La Grange		2.80	7			
Monticello		2.50	7-8			
Quitman		3.50	8-9			
<i>Louisiana.</i>						
Girard		2.70	20			
Liberty Hill		2.70	19			
Monroe		3.92	20			
North Louisiana Experiment Station		3.52	19			
<i>Maine.</i>						
Calais		2.61	11-12			
<i>Mississippi.</i>						
Fayette		2.91	19-20			
Hattiesburgh		2.81	19			
Okolona		2.70	7			
Waynesborough		2.50	19			
<i>Missouri.</i>						
Appleton City		2.65	24			
Columbia		2.78	18-19			
<i>North Carolina.</i>						
Hatteras		2.67	28-29			
<i>South Carolina.</i>						
Anderson		2.75	21			
Belmont		3.25	19-20			
Camden		4.15	20-21			
Effingham		2.87	21			
Winnaborough		2.97	20			
<i>Tennessee.</i>						
Dunlap		3.21	7			
<i>Texas.</i>						
Palestine		3.17	19	1.12	1 00	19
Waco				1.10	0 30	19

MAXIMUM RAINFALL IN ONE HOUR OR LESS.

The following table is a record of the heaviest rainfall during February, 1892, for periods of five and ten minutes and one hour, as reported by regular stations of the Weather Bureau furnished with self-registering gauges:

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	<i>Inch.</i>		<i>Inch.</i>		<i>Inch.</i>	
Atlanta, Ga.	0.12	20	0.17	20	0.47	20
Bismarck, N. Dak. †						
Boston, Mass. †						
Buffalo, N. Y.						
Cincinnati, Ohio	0.03	2	0.05	2	0.20	2
Chicago, Ill. *						
Cleveland, Ohio	0.02	14	0.03	14	0.10	14
Denver, Colo. †						
Detroit, Mich.	0.05	25	0.06	25	0.13	25
Dodge City, Kans. *						
Duluth, Minn. †						
Eastport, Me. †						
Galveston, Tex.	0.20	20	0.35	20	0.80	20
Indianapolis, Ind.	0.05	19	0.07	19	0.17	19
Jacksonville, Fla.	0.07	15	0.09	15	0.19	15
Jupiter, Fla.	0.17	17	0.20	24	0.60	24
Kansas City, Mo.	0.05	4, 7	0.08	7	0.30	4
Key West, Fla.	0.10	24	0.16	24	0.72	24
Marquette, Mich. †						
Memphis, Tenn.	0.30	6	0.55	6	0.65	6
New York, N. Y.	0.01	20	0.02	20	0.10	20
New Orleans, La. †						
Norfolk, Va.	0.06	8	0.09	8	0.35	8
Philadelphia, Pa.	0.03	29	0.05	29	0.24	29
Philadelphia Water Works	0.02	29	0.03	29	0.20	29
Pittsburg, Pa.	0.02	25	0.03	25	0.13	25
Portland, Oregon	0.05	28	0.06	28	0.18	28
Saint Louis, Mo.	0.05	1	0.10	1	0.30	1
Saint Paul, Minn. †						
San Diego, Cal.	0.10	5	0.15	5	0.30	5
San Francisco, Cal.	0.04	17	0.08	17	0.25	17
Savannah, Ga.	0.17	9	0.24	9	0.78	9
Washington, D. C.	0.03	29	0.05	29	0.25	29
Wilmington, N. C.	0.00	15	0.07	8, 15	0.21	8, 15

* Record incomplete. † No record on account of snow. ‡ Less than 0.05 in 1 hour.

The following tables show the number of years for which monthly precipitation to equal or exceed 10.00 inches, daily

precipitation to equal or exceed 2.50 inches, and hourly precipitation to equal or exceed 1.00 inch has been reported in the several states and territories for February during the last 22 years.

Excessive monthly precipitation.

State.	No. years noted.	State.	No. years noted.
California	14	New Hampshire	1
Oregon	11	New Mexico	1
Washington	10	Virginia	1
Tennessee	10	Arizona	1
North Carolina	9	Utah	1
Texas	7	Colorado	0
Alabama	7	The Dakotas	0
Indiana	6	Delaware	0
Mississippi	6	District of Columbia	0
New York	5	Idaho	0
Georgia	5	Indian Territory	0
Florida	4	Iowa	0
Louisiana	4	Maine	0
Arkansas	4	Maryland	0
Connecticut	3	Minnesota	0
Kentucky	3	Missouri	0
Pennsylvania	3	Montana	0
Illinois	3	Nebraska	0
Massachusetts	2	Nevada	0
Ohio	2	New Jersey	0
Rhode Island	2	Vermont	0
South Carolina	2	West Virginia	0
Kansas	1	Wisconsin	0
Michigan	1	Wyoming	0

Excessive daily precipitation (24 hours).

Texas	13	Arizona	2
Alabama	12	Iowa	2
Georgia	12	Massachusetts	2
Tennessee	12	The Dakotas	2
New York	10	Delaware	1
Illinois	9	New Jersey	1
Arkansas	9	Rhode Island	1
Louisiana	9	South Carolina	1
North Carolina	9	Colorado	0
Florida	8	District of Columbia	0
Mississippi	7	Idaho	0
Oregon	6	Indian Territory	0
Kentucky	5	Minnesota	0
Connecticut	5	Montana	0
Ohio	5	Nebraska	0
California	4	Nevada	0
Indiana	4	New Hampshire	0
Michigan	4	New Mexico	0
Pennsylvania	4	Utah	0
Kansas	4	Vermont	0
Maryland	3	Washington	0
Virginia	3	West Virginia	0
Maine	3	Wisconsin	0
Missouri	3	Wyoming	0

Excessive hourly precipitation.

Tennessee	7	Kentucky	0
North Carolina	4	Maine	0
Texas	4	Maryland	0
California	3	Massachusetts	0
Mississippi	3	Minnesota	0
Alabama	2	Missouri	0
Arkansas	2	Montana	0
Florida	1	Nebraska	0
Georgia	1	Nevada	0
Louisiana	1	New Hampshire	0
Michigan	1	New Jersey	0
Pennsylvania	1	New Mexico	0
Arizona	0	New York	0
Colorado	0	Ohio	0
Connecticut	0	Oregon	0
The Dakotas	0	Rhode Island	0
Delaware	0	South Carolina	0
District of Columbia	0	Utah	0
Idaho	0	Vermont	0
Illinois	0	Virginia	0
Indiana	0	Washington	0
Indian Territory	0	West Virginia	0
Iowa	0	Wisconsin	0
Kansas	0	Wyoming	0

The following tables give exceptionally heavy monthly, daily, and hourly precipitation reported for February during the last 22 years:

Monthly.

Station and state.	Am't.	Year.	Station and state.	Am't.	Year.
Boulder Creek, Cal	Inches.	1891	Felton, Cal	Inches.	1891
Cuyamaca, Cal	34.03	1891	Summit, Cal	21.69	1891
Laurel, Cal	28.95	1891	Crecent City, Cal	20.70	1891
Cisco, Cal	22.85	1887	Highlands, N. C.	20.20	1891

Daily (24 hours).

Station and state.	Amount.	Date.	Station and state.	Amount.	Date.
Stonewall Mine, Cal	Inches.	21-24, 1891	Luling, La	Inches.	13-14, 1891
Cuyamaca, Cal	23.90	21-24, 1891	Palermo, Cal	6.24	14-15, 1891
Santa Rosa Ranch, Cal.	22.40	21-23, 1891	Vacaville, Cal	6.12	14-15, 1891
Oneida, N. Y.	15.33	21-23, 1891	Highlands, N. C.	6.10	8-9, 1891
Emilie, La.	10.10	13, 1874	Mt. Vernon B'ks, Ala.	6.01	13, 1891
Maurepas, La	8.42	12-14, 1891	Monroe, La	5.82	12-13, 1891
Julian, Cal	7.55	15, 1891	Athens, Ga	5.26	7, 1891
Oakland, Cal	7.48	23-24, 1891	Los Gatos, Cal	5.12	14-15, 1891
Farleys Camp, Ariz.	6.65	15, 1891	Kosciusko, Miss	5.00	12-13, 1891
Campo, Cal	6.45	17-18, 1891			
	6.40	21-22, 1891			

One hour and less.

Station and state.	Amount.	Time.	Date.
Memphis, Tenn.	Inches.	h. m.	
Do	0.30	0 05	6, 1892
Do	0.25	0 05	8, 1891
Do	0.55	0 10	6, 1892
Little Rock, Ark.	0.70	0 12	6, 1892
Louisville, Miss	1.93	0 30	26, 1890
Galveston, Tex	3.04	0 55	27, 1872
Do	3.31	1 00	22, 1888

SNOW (in inches and tenths).

The snowfall was reported unusually heavy in the Adirondack Mountains, New York. In nearly all parts of Iowa the snowfall was insufficient to protect crops, and in some localities wheat and other grains were injured. On the 7th an unusually heavy fall of snow was reported at Lordsburgh, N. Mex., and reports stated that the heaviest fall in years occurred in the mountains near that place. Heavy snow was reported on the 8th at Ishpeming, Mich. At Pierre, S. Dak., snow was badly drifted and travel impeded on the 10th. A heavy snowstorm prevailed over a great part of New York and New England on the 11th and 12th, and snow fell on those dates generally over the middle Atlantic states.

MONTHLY SNOWFALL.

The depth of snowfall for the month, as reported by regular and voluntary observers of the Weather Bureau, is shown on Chart V. The greatest depth of snowfall reported was 49, at Calais, Me.; more than 40 fell at Cumbres, Colo., and Turin, N. Y. The monthly snowfall exceeded 30 at Summit, Cal., Palmetto, Nev., Natural Bridge (Strawberry, Coconino Co.), Ariz., Chama, N. Mex., Atlantic, Mich., and Monroe, Mass.; it exceeded 20 in Maine, except along the coast, in a large area in west-central New England, in northern New Hampshire and northern Vermont, at Blue Knob, Pa., in Upper Michigan, northwest Lower Michigan, northeast Wisconsin, at Hayes Centre, Nebr., Fort Yellowstone, Wyo., in the mountains of Colorado, northern New Mexico, central Arizona, and eastern California, in southwest Nevada, and at Julian, San Diego Co., Cal.; and it exceeded 10 in the mountains of Virginia and West Virginia, over a great part of New York and the upper lake region, from central Nebraska to west-central Kansas, in the middle Rocky Mountain regions, in northern Wyoming, northeast lower Idaho, in an area extending from central Arizona to central Nevada, and in eastern California between the 38th and 40th parallels.

Snowfall of 10 inches, or more, was reported as follows, and in states and territories where the maximum depth was less than that amount the station reporting the greatest is given: *Arizona*.—Natural Bridge, 32.5; Antelope Valley, 22; Strawberry, 18.5; Whipple Barracks, 11.1. *Arkansas*.—Lead Hill, trace. *California*.—Summit, 34; Boca, 26; Cisco, 21; Julian, 20; Towles, 16; Emigrant Gap, 15; Truckee, 12. *Colorado*.—Cumbres, 45; Steamboat Springs, 32; Climax, 30; Rico, 28.5; Ward District, 28; Red Cliff, 26.8; Amherst, 26; Platoro, 25.7; Pagoda (near), 19; Le Roy, 18.3; Julesburg, 18.2; Jefferson, 17.5; Gold Hill, 17; Dillon, 16.2; Moraine, 15.5;

Smoky Hill Mine and Robb, 15; Avoca, Castle Rock, Dumont, Greenhorn, Meeker, and San Acacia, 13; San Luis, 12.8; Gaynor and Yuma, 12.5; Villa Grove, 12.2; Brush, 12; Livermore and Stamford, 11; Grover and Thon, 10.

Connecticut.—Canton, 12; New Hartford, 10.5; West Simsbury, 10. *Delaware*.—Dover, 2.5. *District of Columbia*.—Washington, 7.5. *Georgia*.—Diamond, trace. *Idaho*.—Henry's Lake, 14. *Illinois*.—Fairmount, 8.6. *Indiana*.—Mauzy, 9.2. *Indian Territory*.—Fort Supply, 4. *Iowa*.—Webster City, 9.8. *Kansas*.—McAllaster, 17.2; Norton and Oberlin, 14; Gove City, 12. *Kentucky*.—Fort Thomas, 5.1. *Maine*.—Calais, 49; Kents Hill, 39; Indian Stream and Belfast, 24; Farmington, 23; Lewiston, 21; Cornish, 19.5; Fairfield, 19; East Machias, 18; Orono, 17.5; Eastport, 17.3; Houlton, 17; Portland, 16.8; Fort Preble, 12.5. *Maryland*.—Cumberland (a), 12; Hagerstown, 10.5.

Massachusetts.—Monroe, 30; Groton (a), 27; Fitchburg (a and b), 23; Florida (b) and Leominster, 22; Wakefield, 21; Mount Nonotuck, Savoy, and Gilbertville, 20; Kendall Green and Turners Falls, 19; Concord, 18.5; Ludlow (a), Leicester, North Billerica, and Williamstown, 18; Chesnut Hill, 17.5; Andover and Blue Hill (Summit), 17; Ashland, Mansfield, and Roxbury, 16; Dudley and Westborough, 15; Springfield Armory, 14.5; Amherst Experiment Station (a and b), Lake Cochituate, Lawrence, and Salem (b), 14; Amherst, Milton, Newburyport (a), and Roberts Dam, 12; Boston and Fall River (a), 11.5; Randolph, 11; Fiskdale, Monson, and New Bedford (a), 10.

Michigan.—Atlantic, 30; Marquette, 27.5; Harbor Springs, 25.5; Cheboygan, 25; Harrisville, 24.1; Lathrop, 24; Berrien Springs (a), 23.5; Escanaba, 23.2; Crystal Falls, 22.5; McMillan, 21; Ivan, 20.2; Weldon Creek, 19.1; Fort Mackinac, 18.4; Calumet and Sand Beach, 18; Charlevoix, 16.6; Sault de Ste. Marie, 16.5; Berlin, 15.6; Alpena, 15.3; Caldwell, 15; Lansing, 14.8; Saint Ignace and Thornville, 14; Washington, 13.5; Grayling, 13; Olivet, 11.2; Fitchburgh and North Aurelius, 11; Bear Lake and Kalamazoo, 10.8; Ball Mountain, 10.6; Bellaire, 10.5; Ann Arbor and Highland Station, 10. *Minnesota*.—Farmington, 16; Fort Ripley and Rolling Green, 12; Duluth, 11.4; Maple Plain, 11.2; Fergus Falls (a), 10.

Missouri.—Oregon (a), 2.6. *Montana*.—Martinsdale, 13.5; Dearborn Canyon, 12.8. *Nebraska*.—Hayes Centre, 22.5; Kimball, 15; Fort Sidney and Precept, 12; Marquette, 11.5; Minden, 11.1; Ravenna, 11; Ansley, 10. *Nevada*.—Palmetto, 38; Elko, 30; Tybo, 23; Pioche, 16.8; Belmont, 16.5; Lewers Ranch, 16; Wadsworth, 13.2; Virginia City, 13; Reno State University, 12; Genoa and Verdi, 10. *New Hampshire*.—Peterborough, 26; Manchester, 24.6; North Conway, 21; Nashua, 20.2; West Milan and Wiers Bridge, 20; Plymouth, 19; Berlin Mills, 18.5; Newton, 18; East Canterbury, 16; Concord (a), 15; Littleton, 14; Strafford, 10. *New Jersey*.—Tenafly, 5.5. *New Mexico*.—Chama, 32.5; Dulce, 18.5; Monero, 18; Fort Wingate, 14.

New York.—Turin, 42.3; Constableville, 41; Potsdam, 35; Number Four, 33.7; Le Roy, 33; Utica, 31; Oswego, 27.7; Humphrey, 23.7; Baldwinsville, 23.5; Plattsburgh Barracks, 22.9; Glen Falls, 21.8; Sherman, 21.5; Malone, 19.2; Coopers-town, 18; Watervliet Arsenal, 17; South Canisteo and Angelica, 16.5; North Hammond, 15.5; Canton, 13.3; Alfred Centre, 12.8; Oxford, 12.2; Buffalo, 10.8; Madison Barracks, 10.6; Rochester, 10.3; Arcade, 10.1; Palermo, 10. *North Carolina*.—Bryson City, 2. *North Dakota*.—Saint John's, 11.5; Kelso, 10. *Ohio*.—Garrettsville and Jacksonborough, 10. *Oklahoma*.—Gate City, 5. *Oregon*.—Siskiyou, 5.5. *Pennsylvania*.—Blue Knob, 22.2; Somerset, 20.5; Confluence, 20; Stoyestown, 19; Grampian Hills, 18.5; Emporium and Saengerstown, 16; Honesdale, 13; Pleasant Mount, 11.2; Wysox, 11; McConnellsburgh, 10.5.

Rhode Island.—Providence (c), 10. *South Dakota*.—Millbank, 12.5; Spearfish, 11. *Tennessee*.—Rugby, 1. *Texas*.—Ochiltree, 0.1. *Utah*.—Losee, 14.5; Provo City, 11. *Vermont*.—Burlington and Jacksonville, 26; Brattleborough (a),

25; Enosburgh Falls and Vernon, 20; Northfield, 19.6; Hartland, 19.2; Chelsea and Strafford, 18; Wells, 17; Lunenburg, 11.5. *Virginia*.—Staunton, 16; Lexington, 15; Dale Enterprise, 12.5; Woodstock, 11. *Washington*.—Spokane, 3.1. *West Virginia*.—White Sulphur Springs, 17; Alderson, 15; Martinsburgh and Romney, 12.5; Beverly and Parkersburgh, 10.5; Elkhorn and Cannery, 10.

Wisconsin.—Crandon, 25.8; Florence, 25.7; Embarrass, 23.2; Butternut, 23; Peshtigo, 20; Koepenick, 18; Green Bay, 17.1; Viroqua, 17; Bayfield, 16; De Pere, 15.7; Medford (b), 15.6; Medford (a) and Portage, 15.5; Phillips, 15; Columbus and Hayward, 14.8; Oconto, 14.5; Harvey, 13.3; Eau Claire (a), 13; Chippewa Falls and Oshkosh, 12.5; Appleton and Plover, 12; Menomonie, 11.8; Madison, 11.5; New Holstein and Wittenberg, 11.4; Milwaukee, 10.6; Weston, 10.5; Beaver Dam, 10.2; Fond du Lac, 10. *Wyoming*.—Fort Yellowstone, 21; Fort McKinney, 13.5; Cheyenne, 11.7; Fort D. A. Russell, 10.

DEPTH OF SNOW ON GROUND ON 15TH AND AT THE CLOSE OF THE MONTH.

Chart VI shows the depth of snow on the ground at the close of the month, as reported by regular and voluntary observers of the Weather Bureau.

On the 15th a depth of 36 was reported in northern New Hampshire, 31 in the interior of Maine, 20 to 40 in the Adirondack region in New York, and 20 to 30 in Upper Michigan and parts of northern Lower Michigan, in east-central North Dakota, the mountains of Colorado, and central Idaho. More than 10 was noted generally in New England north of Connecticut, in central and northern New York, over the north half of the upper Lake region, in central and northeast North Dakota, north-central and south-central Colorado, and at many points in the plateau region between the 39th and 45th parallels.

At the close of the month a depth of 24 was reported in the interior of Maine, 20 to 30 in the Adirondacks, New York, 24 at Atlantic, Mich., and more than 20 in the mountains of Colorado. The depth of snow exceeded 10 in northern New England and northern and central New York, over the north part of the upper lake region, in central North Dakota, and in west-central Idaho.

HAIL.

Description of the more severe hailstorms of the month is given under "Local storms." Hail was reported as follows: 1st, Arizona, New York, and Pennsylvania. 2d, New Jersey and New York. 3d, Arizona and Colorado. 4th, California and Utah. 5th, Arizona, California, Kansas, and Virginia. 6th, California and Arkansas. 7th, Arizona, California, Illinois, Indiana, Iowa, Maryland, New Jersey, New York, Ohio, Pennsylvania, Tennessee, and Texas. 8th, Arizona, California, and Ohio. 11th, Maryland, Massachusetts, New Jersey, and New York. 13th, Texas. 14th, Kentucky, New York, and Pennsylvania. 15th, New Mexico. 17th, Kansas. 18th, Iowa and Mississippi. 19th, Iowa, Louisiana, New Jersey, New York, and Texas. 20th, Texas. 22d, Wyoming. 23d, North Carolina. 24th, California. 26th, New Mexico and Washington. 28th, Missouri, North Carolina, Oregon, Tennessee, and Virginia. 29th, New York, Pennsylvania, Tennessee, and Virginia.

SLEET.

Description of the more severe sleet storms of the month is given under "Local storms." Sleet was reported as follows: 1st, Michigan, Nebraska, New York, Ohio, Pennsylvania, South Dakota, and Wisconsin. 2d, Connecticut, New Jersey, New York, Ohio, Pennsylvania, and Virginia. 3d, Maine, New Mexico, Ohio, and Pennsylvania. 4th, California, Iowa, Nebraska, and Wisconsin. 5th, Arizona. 6th, Illinois, Iowa, Kansas, and Nebraska. 7th, Connecticut, Illinois, Iowa, Louisiana, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Virginia, and Washington. 8th, California, Colorado, Maine, Massachusetts, New Hampshire, New York, Ohio, and Wisconsin.

9th, Connecticut, Massachusetts, and Pennsylvania. 10th, Illinois and Iowa. 11th, Connecticut, New Mexico, and New York. 12th, Ohio. 13th, Washington. 14th, Connecticut, Illinois, Iowa, Michigan, New York, and Pennsylvania. 15th, Iowa and Missouri. 18th, Iowa, Kansas, Michigan, Missouri, and Ohio. 19th, Illinois, Iowa, Kansas, New York, Ohio, Oklahoma Territory, Pennsylvania, and Washington. 20th,

Arkansas, Nebraska, North Dakota, Pennsylvania, and South Dakota. 22d, Nebraska and North Dakota. 24th, Iowa and Wisconsin. 26th, New Mexico. 27th, Kansas, Nebraska, New Mexico, North Carolina, North Dakota, and Virginia. 28th, Virginia. 29th, Montana, Nebraska, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, and Wisconsin.

WINDS.

The prevailing winds in February, 1892, are shown on Chart II by arrows flying with the wind. In New England, the middle Atlantic states, the Ohio Valley and Tennessee, the lower lake region, the extreme northwest, the upper Mississippi valley, and on the northeast slope of the Rocky Mountains they were generally from northwest to northeast; in the south Atlantic states and over the Florida Peninsula, from north to northeast; in the east Gulf states, from north to east; in the Missouri Valley and on the southeast slope of the Rocky Mountains, from northwest to north; on the middle-eastern slope of the Rocky Mountains and on the south Pacific coast, from west to northwest; over the northern plateau region, from southeast to southwest; on the north Pacific coast, from east to south; on the middle Pacific coast, from west to north; and in the west Gulf states, the upper lake region, and over the middle and southern plateau regions, variable.

HIGH WINDS. [In miles per hour.]

Wind velocities of 50 miles, or more, per hour were reported at regular stations of the Weather Bureau as follows: 3d, 60, e., at Tatoosh Island, Wash. 5th, 53, n., at Kitty Hawk, N. C.; 50, n., at Hatteras, N. C. 6th, 60, sw. at Amarillo, Tex. 7th, 55, sw., at Chicago, Ill. 9th, 57, nw., at Fort Assinaboine, Mont. 11th, 60, ne., at Eastport, Me.; 50, e., at Block Island, R. I. 12th, 52, nw., at Fort Assinaboine, Mont. 13th, 54, sw., at Abilene, Tex.; 54, sw., at Amarillo, Tex. 21st, 60, s., at Fort Canby, Wash. 22d, 60, n., at Hatteras, N. C.; 60, n., at Kitty Hawk, N. C. 23d, 56, n., at Hatteras, N. C.; 55, n., at Kitty Hawk, N. C. 24th, 52, n., at Hatteras, N. C. 27th, 64, ne., at Block Island, R. I. 28th, 51, ne., at Block Island, R. I.

LOCAL STORMS.

A heavy rain and snow storm was reported in Yavapai county, Ariz., during the first five days of the month. After the 3d the precipitation at Prescott was largely in the form of snow, and the snowfall in the mountains near that place was quite heavy.

5th.—About 10 a. m., during a snowstorm with high northeast wind, the "Red D" Line S. S. "Venezuela" went ashore on Brigantine Shoals on the New Jersey coast, but was floated off at high tide on the 7th. In the evening heavy north to northwest squalls were reported off the North Carolina coast.

6th.—At Lamonte, Mo., a thunderstorm occurred 1.30 p. m.; a barn was struck by lightning and burned; and one horse was killed and another badly shocked by lightning. At Little Rock, Ark., a thunderstorm from the southwest began 6.15 p. m., with heavy rain and a few small hailstones; 0.70 inch of rain fell in 12 minutes, flooding sewers in the lower part of the city.

7th.—A destructive storm from the southwest was reported in the southern part of Wood county, Ohio, at 3 p. m., local

time. The path of destruction was 40 rods in width; the storm was preceded by excessive rainfall; it was attended with heavy thunder; hail one-fourth inch in diameter fell; and the damage to buildings in the vicinity of Cygnet was estimated at \$2,500. At Detroit, Mich., the wind reached a velocity of 36 miles per hour from the southwest at 10.55 p. m.; sleet and rain fell at intervals during the day; and at 4.50 p. m. a thunderstorm, with heavy rain, was observed at Windsor, Ontario. A heavy thunderstorm lasting 20 minutes, without precipitation, was reported at Baldwinsville, N. Y.

11th.—A heavy snow and rain storm, with high wind, prevailed along the New England and middle Atlantic coasts. At Boston, Mass., snow fell to a depth of 6 inches; coastwise steamers were delayed; and considerable damage was caused to electric wires. At Leicester, Mass., 12 inches of snow fell, and the storm was reported the most severe of the winter. At Woods Holl, Mass., snow changed to rain 10 a. m., and the wind was high in the evening. At Block Island, R. I., heavy rain fell, and the wind reached a velocity of 50 miles per hour from the east at 10.14 a. m. At Nantucket, Mass., the storm was reported the severest of the season. Rain began in the early morning and continued until 2.09 p. m., when thunder and lightning, with heavy hail lasting one minute, were observed. The wind reached a velocity of 49 miles per hour from the southeast at noon; at 2.15 p. m. it shifted to southwest, and at 6.30 to west. At Baltimore, Md., snow began 7.15 a. m., and fell heavily at intervals until 9.25 a. m., when it changed to rain, and the rain ended 10.05 a. m. From 1 to 1.45 p. m. the wind was high from the northwest, reaching a velocity of 35 miles per hour at 1.25 p. m. A report from Lutherville, about 12 miles north of Baltimore, states that a rain and thunder storm visited that place about 4.10 p. m. The storm advanced from the west, with high wind and small hail, and lasted about 30 minutes. The snowstorm continued in eastern Massachusetts until the early morning of the 12th, a depth of 7 to 12 inches being noted. At Manchester, N. H., snow fell to a depth of 15 inches.

12th.—At Port Angeles, Wash., the wind backed suddenly from east to southwest in the early morning and reached a velocity of 30 miles per hour. At 11.46 a. m. a velocity of 46 miles per hour from the south was recorded, and the gale continued until 4 p. m.

13th.—High south to west winds occurred on the southeast slope of the Rocky Mountains. In the evening thunder and lightning, with heavy dashes of rain, preceded a gust from the southwest; during which a velocity of 54 miles per hour was noted at Abilene, Tex.

19th.—At Palestine, Tex., a thunderstorm from the southwest, with heavy rain, began 5.05 p. m. and ended 9.10 p. m.; 2.64 inches of rain fell in 2 hours and 50 minutes; washouts were reported on railroads, and there was a marked fall in temperature.

22d.—High northerly winds and light rain prevailed at Hatteras, N. C. The schooner "Annie E. Pierce" went ashore about 10 miles north of Hatteras; one person was drowned, another was injured, and the vessel was a total loss.

24th.—At Jupiter, Fla., brisk northeast winds prevailed and a heavy sea was running. During a squall near Lake Worth Inlet the schooner "Bessie B." went ashore, and the vessel and cargo were reported a total loss.